Claims

1. Piezoceramic multilayer actuator (1) with internal electrodes (3) led out alternatingly to opposite surfaces (10) of the actuator (1), which internal electrodes are interconnected on the respective surface (10) of each by an external electrode (4, 5), which consists of at least one layer of a base metallisation (11) deposited on the inactive region (14) of the actuator (1), by means of which base metallisation a reinforcing layer (12) is connected by means of an interconnecting layer (13), to which reinforcing layer a connection (6) to a voltage source can be soldered, characterised in that the surface (10) of the multilayer actuator (1) has a pattern (18) in the inactive region (14) that is produced by erosions (19) interrupting the surface (10), and that the base metallisation (11) is deposited exclusively on the surface (10) left by the pattern (18).

2. Piezoceramic multilayer actuator according to Claim 1, characterised in that the depth (24) of the erosions (19) producing the structure (18) corresponds to the thickness of the insulating region (14) at the surface (10) of the actuator (1).

3. Piezoceramic multilayer actuator according to Claim 1 or 2, characterised in that the depth (24) of the pattern (18) is up to approximately 0.5 mm.

4. Piezoceramic multilayer actuator according to one of Claims 1 to 3, characterised in that the erosions (19) of the surface (10) of the actuator (1), producing the pattern (18) consist of grooves (20).

5. Piezoceramic multilayer actuator according to Claim 4, characterised in that the grooves (20) are disposed parallel to one another.

6. Piezoceramic multilayer actuator according to Claim 4 or 5, characterised in that the width (22) of a groove (20), the spacing (21) between two grooves (20) and the angle (25) of these grooves (20) with respect to the longitudinal axis (23) of the actuator (1) are adjusted with respect to one another so that no more than a predetermined number of internal electrodes (3) occurs between two grooves at the surface (10) of the actuator.

7. Piezoceramic multilayer actuator according to one of Claims 4 to 6, characterised in that the width (22) of the grooves (20) is 0.2 mm to 2 mm, preferably 0.2 mm to 0.7 mm.

8. Piezoceramic multilayer actuator according to one of Claims 4 to 7, characterised in that the grooves (20) are disposed at a spacing (21) of 0.2 mm to 10 mm.

9. Piezoceramic multilayer actuator according to one of Claims 6 to 8, characterised in that the optimum number of internal electrodes (3) that occurs

between two grooves at the surface (10) of the actuator is approximately five and thus the spacing of the grooves (20) between one another is approximately 0.8 mm to 1.2 mm.

10. Piezoceramic multilayer actuator according to one of Claims 4 to 9, characterised in that the grooves (20) run at an angle of 0 degrees to 80 degrees, preferably from 30 degrees to 50 degrees, to the longitudinal axis (23) of the actuator (1).

11. Piezoceramic multilayer actuator according to one of Claims 4 to 10, characterised in that the pattern (18) is a grid (26) of crossing grooves (20).

12. Piezoceramic multilayer actuator according to one of Claims 1 to 11, characterised in that the pattern (18) is produced by a machine cutting process.

13. Piezoceramic multilayer actuator according to one of Claims 1 to 11, characterised in that the pattern (18) is produced by a laser process.

14. Piezoceramic multilayer actuator according to one of Claims 1 to 13, characterised in that the pattern (18) is incorporated in the surface (10) in the green state of the actuator (1).

15. Piezoceramic multilayer actuator according to one of Claims 1 to 13, characterised in that the

pattern (18) is incorporated in the surface (10) in the sintered state of the actuator (1).

16. Process for the manufacture of a piezoceramic multilayer actuator according to one of Claims 1 to 15, characterised in that a pattern is produced on the surface of the inactive region of the actuator by erosions in the surface, and that for connecting the internal electrodes, the base metallisation is deposited exclusively on the surface left by the pattern.

17. Process according to Claim 16, characterised in that to produce the pattern, the surface is eroded to a thickness that corresponds to the thickness of the isolating region.

18. Process according to one of Claims 16 or 17, characterised in that grooves are produced in the surface of the actuator.

19. Process according to Claim 18, characterised in that the grooves are disposed in parallel.

20. Process according to Claim 18 or 19, characterised in that the width of a groove, the spacing between two grooves and the angle of these grooves with respect to the longitudinal axis of the actuator are adjusted with respect to one another so that no more than a predetermined number of internal electrodes occur between two grooves at the surface of the actuator.

21. Process according to Claim 20, characterised in that the number of internal electrodes that occurs between two grooves in the surface of the actuator is set at five.

22. Process according to one of Claims 18 to 20, characterised in that the grid pattern is produced by crossing grooves.

23. Process according to one of Claims 16 to 22, characterised in that the pattern is produced by a machine cutting process.

24. Process according to one of Claims 16 to 22, characterised in that the pattern is produced by a laser process.

25. Process according to one of Claims 16 to 24, characterised in that the pattern is produced in the green state of the actuator.

26. Process according to one of Claims 16 to 24, characterised in that the pattern is produced in the sintered state of the actuator.